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(71) Applicant (for all designated States except US): **II-VI INCORPORATED [US/US]; 375 Saxonburg Boulevard, Saxonburg, PA 16056 (US).**

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SZELES, Csaba [HU/US]; 1745 Hedwig Drive, Allison Park, PA 15101 (US). VYDYANATH, Honnavalli, R. [US/US]; 21832 Seacrest Lane, Huntington Beach, CA 92646 (US).**

(74) Agents: **LOGSDON, William, H. et al.; Webb Ziesenheim Logsdon Orkin & Hanson, P.C., 700 Koppers Building, 436 Seventh Avenue, Pittsburgh, PA 15219-1818 (US).**

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(54) Title: **RADIATION DETECTOR**

(57) Abstract: A radiation detector made from a compound, or alloy, comprising  $\text{Cd}_x\text{Zn}_{1-x}\text{Te}$  ( $0 \leq x \leq 1$ ), an element from column III or column VII of the periodic table in a concentration about 10 to 10,000 atomic parts per billion and an element selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu in a concentration about 10 to 10,000 atomic parts per billion exhibits full electrical compensation, high-resistivity, full depletion under an applied electrical bias and excellent charge transport.

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